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ABSTRACT

This guide is intended for use in presenting a three-session course designed to develop the problem-solving skills required of persons employed in the manufacturing and service industries. The course is structured so that, upon its completion, students will be able to accomplish the following: describe and analyze problems encountered at work; write a problem statement and communicate it effectively; use an orderly, five-step process to solve problems; apply creativity to the problem-solving process; use the brainstorming technique to help solve problems; explore alternatives; and become adept at using problem-solving techniques for all types of work and personal problems. Included in the guide are a course outline and three sections of materials for use in conducting each of the course's sessions. Each section contains some or all of the following: objectives, topical outline, suggested teaching and evaluation methods, list of materials needed, teacher tips, student handouts, learning activities, worksheets, and case studies. (MN)

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Problem Solving

Problem Solving

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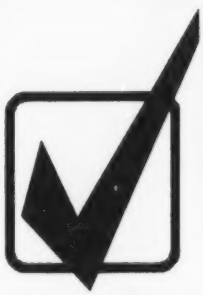
PROBLEM SOLVING



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PROBLEM SOLVING

OBJECTIVES:

- Describe and analyze problems encountered at work
- Write a problem statement
- Use an orderly, step by step process to solve problems
- Apply creativity to the problem solving process
- Use the brainstorming technique to help solve problems
- Become adept at using these techniques for all types of problems (work or personal)

TOPICAL OUTLINE:

- Defining a problem
- Guidelines for writing a problem statement
- Steps in problem solving
- Creative thinking
- People and problems
- Action plan for problem solving

METHODS:

- Discussion
- Working in small groups
- Roleplays
- Completing worksheets

EVALUATION:

- Verbal participation
- Completing worksheets
- Coaching/helping one another in skill development

PROBLEM SOLVING

COURSE OUTLINE:

Session I

1. Introductions and get acquainted activity

2. Review course outline and goals

3. Problem solving:
    a. The importance of developing the skills to solve problems
    b. Learn the key steps in the problem solving process
        - Practice skills through problem solving tasks and role play

Session II

1. Review Session I and discuss opportunities to use skills during the previous week.

2. Recognizing the importance of good communication, critical thinking, decision making and ways to avoid procrastination in problem solving.
    a. Practice specific skills through sample problems, using the key steps.
    b. Small group work to practice building problem solving in work **situations**

Session III

1. Review material of previous weeks and discuss opportunities to use skills during the week

2. Practice using the 5 step process in analyzing participants own previous attempts at problem solving, both successful and unsuccessful.

3. Role play problem solving situations generated from group and discuss

PROBLEM SOLVING ◆ SESSION 1

OBJECTIVES:

- Understand the variety of skills needed
- Learn the key steps of the problem solving process
- Define problems clearly
- Communicate the problem statement
- Explore alternatives

TOPICAL OUTLINE:

- Defining a problem
- Considering feelings about the problem
- Brainstorming
- Learning the step by step process to resolution
- Becoming aware of one's current process

METHODS:

- Discussion
- Working in small groups
- Role-plays
- Completing worksheets

EVALUATION:

- Verbal participation
- Completing worksheets
- Coaching/helping one another

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TEACHER TIPS ◆ SESSION 1

◊ Welcome, introductions and ice breaker activity

◊ Discuss outline and individual course goals/interests

◊ Discuss hand-out "When is there a problem?"...Involve participants by asking for examples from their own experiences

◊ Problem solving activities: *"9 Dots"; *"10 Pennies" (individually first, then groups) *[see attached sheet for instructions]

- Discuss the problem solving that occurred individually and in small groups – Highlight differences/similarities/team work
- Highlight creativity as part of the process
- Note feelings elicited; approaches taken – Draw out discussion of emotions related to on-the-job problems

◊ Discuss hand out " 5 Key Steps..." Focus in depth on steps 1 & 2 Draw in examples from activities and discussion as done above; relate to job-related problems

◊ Discuss hand out "Solving Problems"

◊ Case study hand out for discussion/role-play in steps 1 and 2 of the 5 step process: Discuss in small groups, then full class – draw out differences in viewing and defining a problem, referring to flip charts to tie in "Key Steps".

◊ Case study hand out for discussion/role-play. Individual practice and then small group practice of steps 1 and 2. Discuss and highlight emotions, critical thinking, decision making, perceptions vs. facts.

◊ Summary of principles applied and applications for use – Role-plays will have generated many examples of specific job related problems. Use these to further the discussion.

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IMPROVING PROBLEM SOLVING SKILLS

The ability to learn (that is, to acquire new information, different insights and perspectives, and basic skills) is fundamental to every employee inside a healthy company. The process of learning requires the ability to analyze problems, understand cause and effect relationships, and use sound logic. Other pieces of the process are an ability to recognize patterns, to learn from experience, to test guesses and assumptions and to use trial and error methods of problem solving.

- *When is there a problem?*

  When there is a difference between the way things are and the way someone would like them to be; when something goes wrong or when you want to accomplish something new , there is a problem.

- *What do you have to do?*

  You must get the situation back to working order or accomplish your goal. In order to solve a problem you start with things as they are and work towards making it come out the way you want it to be. Problem solving can involve either correcting something that has gone wrong or accomplishing something new.

- *What feelings do you have when you have a problem?*

  Think about your own feeling/reactions to the problem situation. If you understand where you are coming from, you can consider your feelings as a factor in your problem solving process. (e.g. Are your feelings clouding your thinking or otherwise getting in your way?)

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SOLVING PROBLEMS

Very often when we are faced with difficult problems, we simply do not know where to begin in trying to solve them. Every issue is connected to many others. [THE FEAR OF MAKING A MISTAKE IS OFTEN AN EMOTIONAL BLOCK] Frustrated by not knowing where to take the first step we often give up trying to understand the problem. Instead we may:

1. *Act impulsively*, without thought or consideration (e.g. "I'll just quit work – it's too much to do")

2. *Do what someone else suggests* without seriously evaluating the suggestion (e.g. "Tell me what I should do – I'm tired of thinking about this")

3. *Do nothing* as we wait for events to make the decision for us (e.g. "I'll just wait and see what happens before doing anything")

TO SOLVE A PROBLEM, WE MUST BE WILLING TO **ADMIT THAT A PROBLEM EXISTS** AND WE MUST BE WILLING TO **COMMIT** OURSELVES **TO TRYING TO SOLVE** THE PROBLEM

Have You Seen Something Like This Before

Another approach to problems is to find a problem like the one you've already got. It may be a problem you have already solved. It may be a problem that you could solve more easily. In either case, you'll get a boost for your thinking. A helpful clue. A push in the right direction.

In real life, very often the same problem crops up over and over. Sometimes it's disguised a bit. But if you don't learn from your first solution, you'll just keep getting the problem again. And again. That's no way to go through life.

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5 KEY STEPS TO PROBLEM SOLVING

1. What is the problem?

   - ◊ What do I know about the situation? **Write it out!**
   - ◊ What are the results I am aiming for in this situation?
   - ◊ How can I define the problem/How can I state the problem clearly?

☛[*if the problem is too big, break it down into smaller problems that need solving*]

2. What are the alternatives?

   - ◊ What are the boundaries of the problem?
   - ◊ What alternatives are possible within these boundaries?

3. What are the advantages and/or disadvantages of each alternative?

   - ◊ What are the advantages of each alternative?
   - ◊ What are the disadvantages of each alternative?
   - ◊ What additional information do I need to evaluate each alternative?

4. What is the solution?

   - ◊ Which alternative(s) will I pursue?
   - ◊ What steps can I take to act on the alternative(s) chosen?

5. How well is my solution working?

   - ◊ What is my evaluation?
   - ◊ What adjustments are necessary?

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PROBLEM SOLVING

Here is a problem that might occur at work. Read the situation below for small group discussion.

Luis didn't like the way his department scheduled vacations. He always got his last choice because he had worked there the least amount of time – five years. He figured that five years was a long time, even if he hadn't worked there as long as everyone else. He complained loudly to other workers, especially when his boss was in hearing range.

In your small group discuss:

1. How could Luis have handled the situation better?

   What is the problem?

   Who is involved?

   How could he have handled it – what are some alternatives?

   Which alternative might be best for him?

2. Do you think Luis should have discussed the problem with his boss? Why or why not?

3. What do you think of complaining as a way to solve a problem?

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CASE STUDY

Imagine yourself in the following situation. What would your next move be?

Discuss in small group:

1. What is the problem? Come up with a consensus definition.

2. What are the alternatives?

With the J.I.T. system, Lou can't work ahead and he likes to work fast. His supervisor is asking everyone on the line to work more quickly. So, he keeps reminding his co-workers to keep it moving. Lou has also been helping out on another line when things are slow or he's on break. The supervisor on that line likes his help but Lou's supervisor is upset. One of Lou's co-workers gets annoyed with him and purposely works more slowly.

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CASE STUDY

Imagine yourself in the following situation. What would your next move be?

Discuss in your small group:

1. What is the problem? Come up with a consensus definition.

2. What are the alternatives?

Most everyone in your office is really busy. Tempers are short and morale is low. Getting the new account set up and operating smoothly is taking longer than you thought. "Planning" has sent their job jacket and it has been approved. However, you and your group have raised some concerns about the plan as it applies to you. You can see some problems in the way it has been set up based on previous experiences. But your concerns have either not gone beyond your supervisor (he doesn't want to make waves with his manager) or have been ignored. Problems have begun to crop up now and money, time and production are being lost. NOW, your input is being requested.

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MAKING THE MOST OF YOUR WORK DAY ◆ SESSION 2

OBJECTIVES:

- Identify characteristics of critical thinking
- Gain awareness of decision making in choices
- Gain experience with 5 step problem solving process
- Communicate effectively

TOPICAL OUTLINE:

- Critical thinking
- Decision making
- Effective communication
- 5 key steps to problem solving

METHODS:

- Discussion
- Working in small groups
- Role-plays
- Completing worksheets

EVALUATION:

- Verbal participation
- Completing worksheets
- Coaching/helping one another

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PROBLEM SOLVING ◆ SESSION 2

◊ Review Session I material for questions, discussion, self-initiated practice

◊ Warm-up for problem solving skills with "Hidden Squares" activity
- Process through discussion – focusing on shortsightedness from responding hastily; tie in to solving problems on the job and review 5
- Key Steps – refer to flip charts

◊ Discuss hand out "Problem solving hints"

◊ In depth examination of remaining steps of "5 Key Steps to Problem Solving" using case study for role-play/practice. Write list of alternatives generated on board or flip chart. Allow plenty of time for discussion as many job specific examples will be brought up.

◊ Discuss additional key factors to successful problem solving:
- "Win-Win" outcomes, effective communication, critical thinking, and decision making using appropriate hand outs for hands-on learning

◊ Summary of principles applied and applications for use –
- Consider examples provided by participants during this session and tie in

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PROBLEM SOLVING HINTS

1. Use your experience as well as your instinctive sense of what will and will not work

2. Be sure to identify your goal

3. Save criticism until you have a substantial list of solutions

4. The "perfect" solution probably will never come – waiting for it will bog down the process – work on the best solution

5. The solution may be a combination of activities – rarely is there just one simple solution

6. Trial and error is o.k. – *if an effort is unsuccessful, go through the steps of the problem solving process again*

Crazy Connections

Problem solving can be serious stuff.

Don't fool around.
Get down to business.
Don't play around.
Don't be lazy.
Think.

All that may be. But if you only look at thinking as serious business, then you're missing an important key. Sometimes letting your mind play is a good idea. Even being silly.

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WIN-WIN SITUATIONS

When trying to solve a problem, one person doesn't have to be completely right and the other person completely wrong. There can be two winners. Is there a solution that will result in both sides being happy? That is called a "*win-win*" situation.

- How do you get there?
  - * Think about what each person needs.
  - * Discuss what the real issue or problem is.

Consider this problem situation:

* Two workers, Michael and Elizabeth were arguing over the use of the big copy machine. They were both feeling a lot of stress because they had deadlines to meet.

* "I've got to use it now to get this job done by the end of the day," Michael insisted.

* "Well, my work is important, too, and I need to get this 100-page report ready for my boss to hand out at a 9:00 meeting tomorrow," Elizabeth argued back.

PART I

What is the problem?_____

_____

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WIN-WIN SITUATIONS

PART II

Brainstorm (*think up as many ideas as possible, no matter how wild*) possible solutions to Michael and Elizabeth's problem.

After brainstorming:

* Decide and discuss which solution(s) best meet everyone's needs.

* Decide how to put the plan into effect.

* Who will do what?

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PROBLEM SOLVING AND THINKING/REASONING SKILLS WORKSHEET

WHO? WHAT? WHEN? WHERE? WHY? HOW
WHY NOT? WHY NOW?

Read the situation below and begin your problem solving by thinking about/analyzing the problem using the questioning process.

Something is wrong.
The coils aren't bent properly and you can't get your job done.

1. *What has happened?* _____

_____

_____

2. *Why did this happen?* _____

_____

_____

3. *What should have happened?* _____

_____

_____

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PROBLEM SOLVING AND THINKING/REASONING SKILLS WORKSHEET

4. *What needs to be done to correct it?* _____

_____

_____

5. *Who needs to be involved ?* _____

_____

_____

6. *When?* _____

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PROBLEM SOLVING AND THINKING/REASONING SKILLS WORKSHEET

WHO? WHAT? WHEN? WHERE? WHY? HOW
WHY NOT? WHY NOW?

Read the situation below and begin your problem solving by thinking about/analyzing the problem using the questioning process.

⮝ You have noticed that the folder for the job isn't holding the papers, brochures, etc. because the "pockets" are loose. ⮟

1. *What has happened?* _____

_____

_____

2. *Why did this happen?* _____

_____

_____

3. *What should have happened?* _____

_____

_____

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PROBLEM SOLVING AND THINKING/REASONING SKILLS WORKSHEET

4. *What needs to be done to correct it?* _____

_____

_____

5. *Who needs to be involved ?* _____

_____

_____

6. *When?* _____

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PROBLEM SOLVING AND THINKING/REASONING SKILLS WORKSHEET

WHO? WHAT? WHEN? WHERE? WHY? HOW
WHY NOT? WHY NOW?

Read the situation below and begin your problem solving by thinking about/analyzing the problem using the questioning process.

After you and 2 others just collated 200 packets of information, you have discovered that one person consistently forgot to include one brochure.

1. *What has happened?* _____

_____

_____

2. *Why did this happen?* _____

_____

_____

3. *What should have happened?* _____

_____

_____

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PROBLEM SOLVING AND THINKING/REASONING SKILLS WORKSHEET

4. *What needs to be done to correct it?* _____

_____

_____

5. *Who needs to be involved ?* _____

_____

_____

6. *When?* _____

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PROBLEM SOLVING AND THINKING/REASONING SKILLS WORKSHEET

WHO? WHAT? WHEN? WHERE? WHY? HOW
WHY NOT? WHY NOW?

Read the situation below and begin your problem solving by thinking about/analyzing the problem using the questioning process.

You have the "Andon" light on but the light bulbs must be out.

1. *What has happened?* _____

_____

_____

2. *Why did this happen?* _____

_____

_____

3. *What should have happened?* _____

_____

_____

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PROBLEM SOLVING AND THINKING/REASONING SKILLS WORKSHEET

4. *What needs to be done to correct it?* _____

_____

_____

5. *Who needs to be involved ?* _____

_____

_____

6. *When?* _____

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CASE STUDY

Imagine yourself in the following situation. What would your next move be?

Discuss in your small group:

1. What is the problem? Come up with a consensus definition.

2. What are the alternatives?

When you finish your shift, you must get home to care for the kids because your husband/wife has to leave for his/her job. On several occasions there have been line breakdowns during the day which have drastically slowed production. At those times, there has been pressure to stay after shift hours to get caught up on the work You have stayed a few times but often you can't. The last three times you said "No". Your supervisor acts disappointed with you and lets you know it. You stormed off the last time and threatened to go the union. Some rumors are going around that you have an attitude problem.

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CASE STUDY

Imagine yourself in the following situation. What would your next move be?

Discuss in your small group:

1. What is the problem? Come up with a consensus definition.

2. What are the alternatives?

Janet needs some advice/assistance from her supervisor on handling one of your customer accounts. Her co-worker Helen used to work on this account but no longer does. Yet, she becomes involved when she hears Janet discussing it with her supervisor. Many times Helen has good ideas but Janet is too annoyed with her interference to use them. She wants her supervisor to know that she can do the job her own way without Helen's input. She has asked her supervisor to say something to Helen but the supervisor is one of those people who doesn't like to make waves or cause upset.

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MAKING THE MOST OF YOUR WORK DAY ◆ SESSION 3

OBJECTIVES:

- Review problem solving techniques
- Examine one's strengths in problem solving
- Examine one's weaknesses in problem solving
- Plan for self improvement
- Apply techniques successfully

TOPICAL OUTLINE:

- Personality differences
- People problems
- Observe self
- Helping one another

METHODS:

- Discussion
- Working in small groups
- Role-plays
- Completing worksheets

EVALUATION:

- Verbal participation
- Completing worksheets
- Coaching/helping one another

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PROBLEM SOLVING ◆ SESSION 3

- ◊ Review Session II material for questions, discussion, self-initiated practice
- ◊ Warm-up for problem solving skills with "The IX Exercise" – Focus on perceptions/simplicity in finding a solution
- ◊ Discuss hand out summarizing problem solving and "What's Right Here?"
- ◊ Discuss hand out "People and Problems" – personality differences will come out in discussion and consequently different approaches to problem admission/ recognition/ solving
- ◊ Discuss and role-play case study, completing the 5 step process
- ◊ Generate and discuss individual job related problems identified and problem
- ◊ solve in small groups
- ◊ Using worksheets, review/analyze unsuccessful/successful problem solving experience
- ◊ Summary of principles applied
- ◊ Course evaluation and wrap up

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PROBLEM SOLVING

Think of problem solving as:

1. an orderly, rational process
2. the quality of the solution depends on imagination
3. creativity is essential
4. including decision making as part of the process – i.e. making choices among alternatives

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ROLE PLAY SCENARIOS

Suppose your supervisor or co-worker brought to your attention any of the following problems. How would you respond?

Situation 1 "This is all wrong. I'm sick and tired of having to do everything myself if I want it done right."

Situation 2 "Did you have anything to do with these broken parts?"

Situation 3 "I want to talk to you about playing your radio while you work."

Situation 4 "There are pliers and pop-rivet guns missing."

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PROBLEM SOLVING WORKSHEET

When it's been a successful experience:

1. Describe a situation in which you successfully solved a problem. (What did you think was happening?)

2. What reactions/thoughts did you have about the situation? What did you do to solve it? [Look at the hand-out for the "5 Key Steps to Problem Solving" and see whether your efforts followed these steps.]

3. Did you handle (problem solve) this alone or did you work together with others to solve this problem? What was it like? How did it all work out?

4. As you look back on the situation what do you think you might have done differently as far as following the "5 Key Steps" format?

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PROBLEM SOLVING WORKSHEET

When it's been an unsuccessful experience:

1. Describe a situation in which you did not cope well with a problem.

2. What thoughts, feelings and behaviors prevented you from dealing with this situation effectively?

3. As a result of this experience, what did you learn about your problem solving? (What would [or did] you do differently the next time especially as you consider the "5 Key Steps to Problem Solving"?)

Review your responses on the two worksheets. What are the **differences** in how you perceived and handled the two situations?

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PEOPLE AND PROBLEMS

Almost all problems, even mechanical failures, involve people one way or another.

Sometimes people are the problem. The causes of people's behavior are not always obvious. It would be nice if the people responsible would evaluate and account for their own behavior. But that doesn't always happen.

As Eldridge Cleaver said "If you're not part of the solution, you're part of the problem".

A key to success for people and problems? Invite people to participate in the problem solving process.

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CASE STUDY

Imagine yourself in the following situation. What would your next move be?

Discuss in your small group:

1. What is the problem? Come up with a consensus definition.

2. What are the alternatives?

Giorgio has been in this country for 6 years and has been working here for 3 years. He makes just enough money to pay the bills for himself and his family but he **really doesn't like his work**. [He can't get a job with his training from his own country.] He is going to school to get a better education and hopefully a better job. But he is exhausted and depressed with never enough time for his family or anything else.

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CASE STUDY

Imagine yourself in the following situation. What would your next move be?

Discuss in your small group:

1. What is the problem? Come up with a consensus definition.

2. What are the alternatives?

You are a single parent with a four year old child. You don't like your job because it isn't very interesting and you don't like the stressful environment there from your co-workers. But, it pays your bills. You are also taking some classes after work to better your education and to get a better job. You worry about your attitude at work; the lack of time with your child; not enough money, and your exhaustion and depression.

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